



Lifetime Violence and Perinatal Sleep Quality: A Scoping Review

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Sleep Sci

Abstract

Introduction In-utero experience of violence through maternal experience of intimate partner violence (IPV) is a risk factor for adverse pregnancy outcomes via ‘biological programming,’ whose effect can be mediated by sleep. We conducted a scoping review to synthesize the current evidence of the association between experiences of violence and sleep in women.

Methods Between August and October 2023, we conducted a search in four databases (PubMed, APA PsycInfo, Embase, and Web of Science) for peer-reviewed articles, using 11 inclusion and exclusion criteria. Any study published in English in peer-reviewed journals that conducted original research on the association between exposure to violence (lifetime IPV, IPV during the previous year, during and 1 year after pregnancy, as well as adverse childhood experiences) and poor sleep outcomes (sleep disturbances, insomnia, poor sleep quality, and longer time to fall asleep) in the perinatal population were included.

Results The synthesis of the 12 included studies revealed a positive association between exposure to violence and poor sleep, and between adverse childhood experiences and sleep disturbances or poor sleep during pregnancy. Moreover, IPV in the postpartum period was associated with poor sleep.

Conclusion Most of the evidence synthesized comprises data from high-income countries, resulting in lack of cultural context. However, it is evident that the experience of violence throughout life is a risk for poor perinatal sleep quality. Thus, there is a growing need to study this association, especially in resource-limited settings, where data on sleep health is largely absent, inform pregnancy care and maternal and child health policies.

Keywords

- ▶ intimate partner violence
- ▶ ACE
- ▶ lifetime violence
- ▶ sleep
- ▶ pregnant
- ▶ postpartum

Introduction

Globally, millions of women experience violence, including during and after pregnancy.^{1,2} Female fetuses are vulnerable to sex-selective abortions, female infants, to femicide, female

children, to genital mutilation, female adolescents, to marriage and childbearing, female adults, to intimate partner violence (IPV) or nonpartner violence, and female elderly individuals, to abuse and abandonment.² While every type of violence triggers consequences,^{3,4} violence during

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pregnancy is especially concerning, for its consequences are intergenerational (that is, pregnant women who experience violence during or prior to pregnancy are vulnerable to giving birth to premature or low-birthweight babies)^{5–7} and long-lasting (low-birthweight babies are vulnerable to experiencing poor health and wellbeing all throughout their lives, including adulthood).^{6,8–12}

To date, the literature on perinatal IPV has largely ignored the associations between IPV and sleep—an essential restorative behavior for maternal and fetal health and functioning.¹³ Sleep deprivation, which includes insomnia, difficulty falling or staying asleep, and longer rapid-eye movement (REM) sleep compared to non-REM sleep, are more common among pregnant women who have experienced violence than among pregnant women with no such experience. Both groups may sleep poorly due to the physiological and hormonal changes associated with pregnancy, which start in the first semester and worsen by late pregnancy.^{14,15} Nonetheless, women may experience additional sleep deprivation as a result of IPV, for it can trigger hormone releases, physiological and cognitive arousals, or allostatic overload via threatened homeostasis (the “steady state”), and allostasis (a mutually regulatory network involving the nervous, endocrine, cardiovascular, and immune systems), potentially affecting sleep.^{16,17}

Exacerbated by IPV, maternal sleep deprivation can cause poor maternal and fetal health, for it can disrupt the circadian rhythm and, thereby, body and brain functions. The effects on the body include an allostatic overload, which is defined as wearing of normal body systems and can be stress-induced, or allostasis dysregulation (allostatic overload can also cause or be caused by poor sleep).¹⁸ Further, sleep and stress are often comorbid, reinforcing each other. Like stress, sleep deprivation impacts the inflammatory pathways that include C-reactive protein and interleukin 6 (IL-6), increasing the risk of poor maternal and fetal health.¹⁹ The effects on the brain include depressed cognitive control and poor decision-making (such as substance use or missing clinical appointments), each posing as a risk for poor maternal and fetal health.^{20,21}

In the present study, we conducted a scoping review of the current literature on the association between perinatal IPV and sleep health among pregnant and postpartum women, globally. Our review included 12 studies, which were selected through a systematic search in four peer-reviewed databases using an exhaustive set of search words for IPV, sleep health, pregnancy, and the postpartum period, and applying 11 inclusion⁷ and exclusion⁴ criteria. Our findings, which are reported in three thematic areas, show feasible and acceptable ways of improving perinatal care for women who have experienced perinatal IPV. First, evidence of the association between IPV and poor sleep in the context of pregnancy would suggest that poor sleep is a potential mechanism by which IPV's harmful effects on maternal and fetal health are manifested. Second, helping women sleep better may also help them overcome the harmful effects of sleep disorders and deprivation, as well as IPV. Third, screening and interviewing perinatal women regarding their sleep health,

especially when they also show symptoms of experiences of violence, might be a potent strategy in identifying and addressing gender-based violence.

Conceptual Framework

—**Fig. 1** outlines a conceptual framework to be used to guide the current review in the context of perinatal health promotion. We begin by acknowledging that, while every woman faces a nonzero risk of IPV victimization during pregnancy, who ends up experiencing it in reality is socially determined. Women who experience physical or sexual IPV, or parental neglect or violence as a child, or women who were exposed to domestic violence (for example: as a child, a woman watched her father abusing her mother) face a higher risk of experiencing IPV during pregnancy compared with those who had no such experience as a child.^{22,23}

As for the connection between perinatal IPV and sleep deprivation, we envision several direct and indirect pathways, as well as feedback loops, involving biobehavioral mechanisms. First, pregnant women experiencing IPV may find it difficult to fall or stay asleep, especially when their partner is nearby (pathway A).^{16,24} This is because IPV can trigger hormonal responses, physiological and cognitive arousals, or allostatic overload, affecting sleep.^{12,20,25} Further, IPV can exacerbate the current poor sleep quality of pregnant women due to past trauma.^{21,26} Second, by triggering the same biological mechanism (such as hormonal responses, or deregulating biological systems through allostatic overload), IPV can cause stress, which in turn can cause sleep deprivation directly (pathways B and b) or indirectly, through psychiatric difficulties (pathways (b and D)).^{19,27} Third, pregnant women experiencing IPV have higher odds of reporting symptoms of depression and anxiety, which can cause or be caused by poor sleep via “increased inflammatory dysregulation” (pathways C and c).²⁸ Instigated by IPV, stress, psychiatric difficulties, and sleep deprivation are engaged in a feedback loop, reinforcing each other, and further aggravating the aforementioned biological mechanism (pathway E).¹⁹ Fourth, as for behavioral pathways, women experiencing IPV can turn to substance use to cope,^{29–31} which can contribute to poor sleep (pathways F and f).³²

As for how sleep deprivation can affect maternal, fetal, and neonatal health, the mechanisms involve maladaptive behaviors due to poor psychological or social conditions. Poor sleep is associated with brain health, affecting cognitive control, executive functioning, and decision-making.^{33,34} The affected women become vulnerable to poor psychological conditions, including low coping efficacy or self-esteem, or impairments in socialization, including isolation. All of this can promote poor decision-making, which may lead to substance use,^{35,36} late initiation of antenatal care, missing clinical appointments,^{37–39} or inadequate nutritional intake (pathway G). Each of these maladaptive behaviors can increase the risk of adverse maternal and fetal health outcomes. Finally, experiencing sleep loss induced by IPV, women may become vulnerable to gestational hypertension,

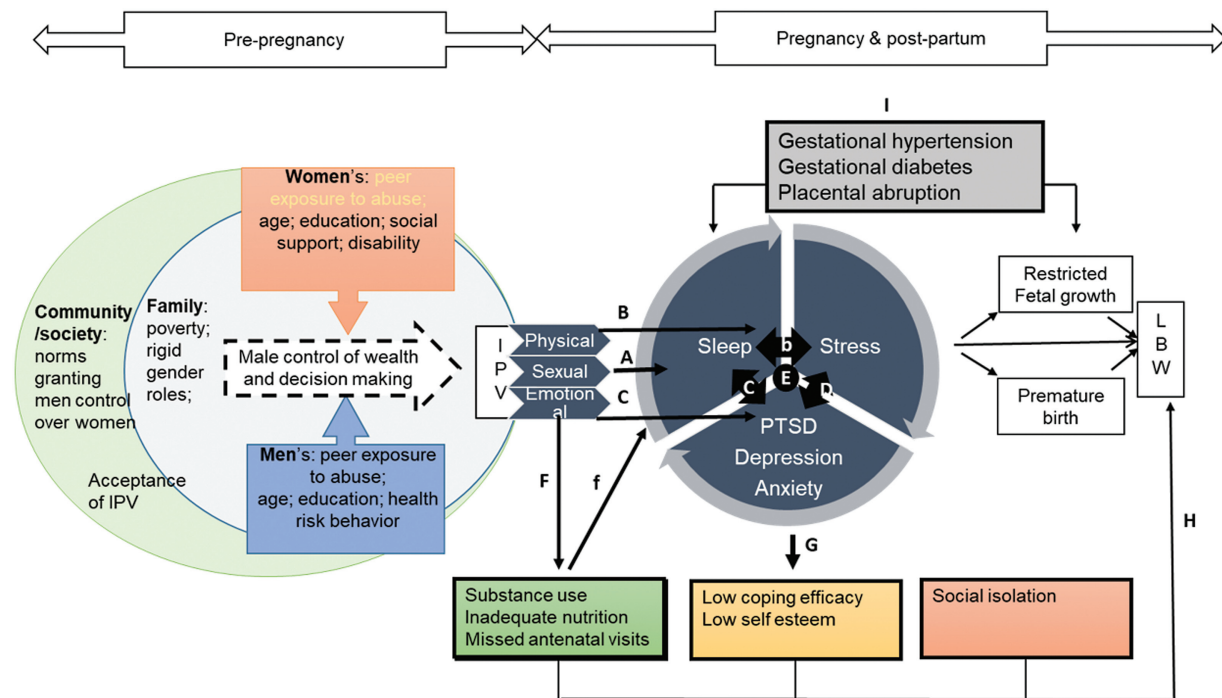


Fig. 1 Conceptual framework of the present study.

gestational diabetes, placental abruption, and thereby, to having a fetus that is small for gestational age, preterm birth, or other fetal health consequences (pathway I).

Methods

Databases and Search Terms and Strategy

From August to October 2023, we conducted a systematic search for peer-reviewed articles in four electronic databases (Pubmed, APA PsycInfo, Embase, and Web of Science) using the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement.^{40,41} Also, we scanned the reference sections of every article selected to ensure the inclusion of all eligible studies. ►**Fig. 2** presents the lists of keywords and medical subject headings (MeSH) terms used in the search. We developed the list based on previous systematic reviews on IPV, sleep health, and the perinatal period (including pregnancy and the postpartum period). We used the Boolean operator OR to expand the search within each category, and we used AND to combine categories. The author NA performed searches and discussed findings with NH, and both authors decided on the final list of articles. The protocol of the present review was not registered.

Inclusion Criteria and Selection Process

We deemed studies eligible if they met all of the following criteria:¹ publication in in peer-reviewed journals²; text written in English;³ original research;⁴ the sample consisting of either women who were pregnant or in the postpartum period, up to 12 months after birth;⁵ inclusion as a predictor variable of an indicator of any experience of violence at any stage of life, such as childhood, adulthood, the previous year, or during pregnancy or during the postpartum period;⁶

inclusion as an outcome variable of an indicator of any form of sleep disturbance;⁷ and assessment of associations between violence and sleep in populations of pregnant and postpartum women. Studies were excluded if they met any of the following criteria:¹ reviews, letters, or editorials;² qualitative analysis;³ text written in languages other than English or without an author-approved translation;⁴ studies whose full text was not available online. To keep the search broad, no geographical filters were applied, and studies from all countries were considered.

We applied the selection criteria in three stages, as outlined in ►**Fig. 3**. First, our search strategy and inclusion criteria yielded a list of 159 studies. Second, after the exclusion of duplicates and of studies whose full text was not available online, the list decreased to 42 studies that underwent further review. Third, both authors read the abstracts and/or full texts of all remaining studies and applied the exclusion and inclusion criteria. Both authors also used a data quality assessment checklist developed for the present review to assess study quality and extract data. Finally, 12 studies were included in the current systematic review.

Results

Populations

In total, 6 out of the 12 studies reviewed were performed in high-income countries such as the United States^{24,43,47,48,50,51} (6/12; 50%), while 1 involved 59 countries.⁵² The rest of the studies were from the following countries: one from Oman,⁴⁶ one from Ethiopia,⁴² one from Iran,⁴⁵ and two from Peru.^{44,49} The ages of the women assessed in these studies ranged from 14 to 40 years, and the periods of life in which they experienced violence included childhood, 12 months prior to

Pregnant woman OR pregnancy OR childbearing OR gestation OR intrauterine pregnancy OR labor presentation OR pregnancy maintenance OR pregnancy trimesters OR expectant mother OR postpartum OR new mothers

AND

Violence against women OR gender-based violence OR domestic violence OR intimate partner violence OR physical abuse OR emotional abuse OR psychological abuse OR neglect OR sexual abuse OR rape OR battered women OR battered wife OR wife abuse OR spousal abuse OR battered females

AND

Sleep disorders OR sleep disturbance OR sleep problems OR insomnia OR sleep apnea OR obstructive sleep apnea OR dyssomnia OR insomnia OR sleep wake disorders OR sleep deprivation

Fig. 2 List of all search terms, including the permutations among them.

pregnancy, pregnancy, postpartum, and throughout life. The samples of the studies were composed of pregnant (8/12; 66.7%) or postpartum women (4/12; 33.3%), with some studies including both groups (► **Supplementary Appendix A**; online only).

Methods

There were ten cross-sectional studies, and two followed prospective cohorts. However, six of the ten cross-sectional studies were derived from either ongoing or completed cohort studies. The samples ranged from 83 to 994 participants selected randomly (5/12; 41.7%)^{42,44,45,49,52} or non-randomly (7/12; 58.3%)^{24,43,46–48,50,51} from 1 to 6 clinics or 1 to 50 communities/communes selected purposively.

Most studies (10/12; 83.3%) recruited participants while they were attending a health facility for ante- or postnatal care, a psychiatric facility, or a maternity ward;^{44–51} while some recruited from both communities and clinics (4/12; 33.3%).^{24,42,43,52} Community-based recruitments involved multiple forms of participant recruitment: some studies advertised in local health centers and community centers using flyers and other forms of advertisement, while others created a census of households in smaller regions within the city and randomly selected participants.^{24,42,43}

The experience of violence was measured in terms of adverse childhood experiences (ACEs) in most studies (8/12, 66.7%),^{24,43,47–52} followed by IPV experience throughout life (4/12, 33.3%),^{44,46,47,52} IPV in the year before pregnancy (5/12, 41.7%),^{24,43–46} and 2 studies (16.7%)^{42,46} included IPV during pregnancy. One study (8.3%) assessed the impact of IPV during the postpartum period.⁴⁷ The measures

included physical IPV^{24,43–47} only (6/12; 50%), sexual IPV only^{24,43–45,47,52} (6/12; 50%), psychological IPV only (5/12; 41.7%),^{24,43–46} financial IPV only (1/12; 8.3%),⁴⁵ physical or sexual IPV (3/12; 25%),^{24,44,47} physical and sexual IPV (2/12; 16.7%),^{44,47} physical and psychological IPV (1/12; 8.3%),⁴⁶ and physical, sexual, or psychological IPV (4/12; 33.3%).^{42,43,45,46}

The ACE measures included physical abuse only (2/12; 16.7%),^{47,49} sexual abuse only (4/12; 33.3%),^{47,49,50,52} psychological abuse only (1/12; 8.3%), physical or sexual abuse (1/12; 8.3%),⁵¹ physical and sexual abuse (2/12; 16.7%),^{49,50} and physical, sexual, or psychological abuse (4/12; 33.3%).^{24,43,48,50} Further, 2 studies (16.7%) recruited pregnant adolescents, all of whom were at risk of childhood violence and maternal psychological violence and measured the association of violence experience with sleep health in all three trimesters.^{42,51}

Sleep outcomes were commonly measured, such as sleep quality (7/12; 58.3%),^{24,42–44,48,49,51} insomnia (4/12; 33.3%)^{44,45,47,49} and sleep disturbances (which may or may not be stress related)/impairment (4/12; 33.3%),^{24,46,47,50} sleep efficiency (1/12; 8.3%),²⁴ sleep latency (1/12; 8.3%),²⁴ problems going to sleep⁵² (1/12; 8.3%) or staying asleep (1/12; 8.3%),⁵⁰ and 2 studies (16.7%) monitored the hours of sleep per night^{50,52} (► **Table 1**).

The experience of IPV was measured using the Revised Conflict Tactics Scales (CTS2; 3/12; 25%),^{24,43,45} violence items on the country's (Peru) demographic and health survey (1/12; 8.3%),⁴⁹ the Dissociative Disorders Interview Schedule (DDIS, 1/12; 8.3%),⁴⁷ or the Validated Arabic Nor-Vold Domestic Abuse Questionnaire (NORAQ; 1/12; 8.3%);⁴⁶ in 2 studies (16.7%), "violence history on inquiry was assessed by a clinician".^{42,47}

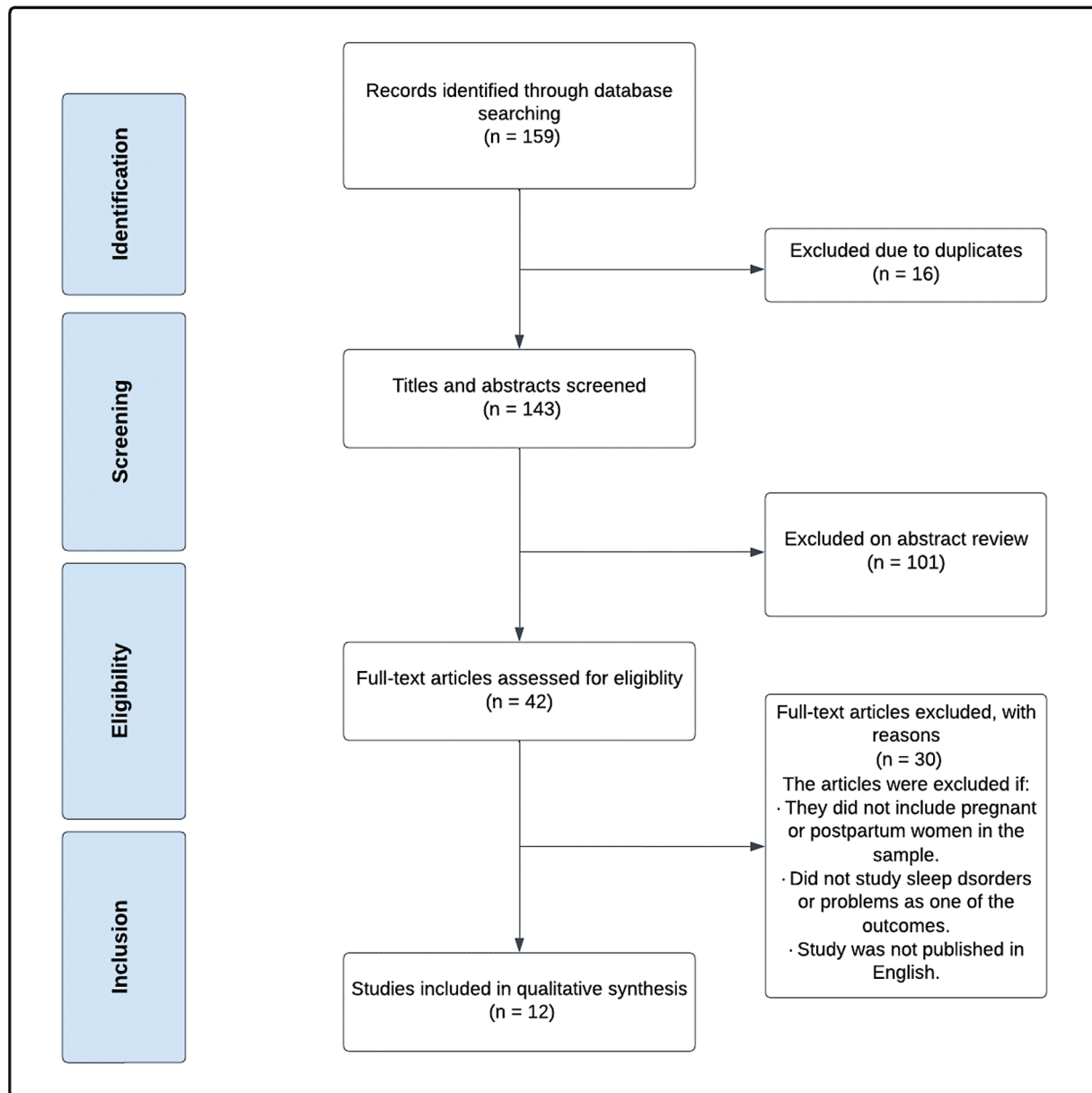


Fig. 3 Systematic review workflow as per the guidelines of the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) statement.

The ACEs²⁴ were measured using the ACEs Questionnaire (1/12; 8.3%), the Childhood Physical and Sexual Abuse Questionnaire (2/12; 16.7%),^{49,52} or the Childhood Trauma Questionnaire-Short Form (CTQ-SF; 3/12; 25%).^{48,50,51}

Sleep health was most frequently measured through the English and Spanish versions of the Pittsburgh Sleep Quality Index (PSQI; 7/12; 58.3%),^{24,42–44,48,49,51} followed by the English and Spanish versions of the Ford Insomnia Response to Stress Test (FIRST; 2/12, 16.7%).^{44,49} Other measures of sleep health included the 28-item General Health Questionnaire, Mother's sleep and Fatigue Survey, sleep items on the Postpartum Depression Screening Scale, and clinician diagnosis.^{45,46,50,52}

Multivariable logistic regression was most frequently used for association estimates (7/12; 58.3%),^{24,42,44,45,47,49,50} followed by stepwise hierarchical regression (3/12; 25%)^{43,47,50}

and the Fisher exact test, the *t*-test, analysis of variance (ANOVA), path analysis, and the Chi-squared test (each: 2/12; 16.7%).^{24,42,45,47,48,52} Structural equation modelling, multivariable linear regression, exploratory mediation analysis and ordinary least squares regression were all used by 1 (8.3%)^{24,46,49,51} study each, while adjusting for 3 to 17 sociodemographic and behavioral variables pertinent to women, husbands, and households.

Findings

Prevalence of Violence

► **Table 2** shows the range values for the prevalence of IPV in different periods of life: lifetime IPV – 4 to 27.6%;^{24,46,47,52} IPV in the 12 months preceding pregnancy – 1 to 59.2%;^{24,43–46,49} IPV during pregnancy – 0.1 to 1.6%;⁴⁶ and

Table 1 Description of the 12 peer-reviewed articles (1990–2022) included in the review.

Author (year)	Country	Data collection period	Study design and setting	Sample size (n)	Sampling strategy	IPV tools	Sleep tools	Statistical methods	Confounders adjusted
Al Shidhani et al. ⁴⁶ (2020)	Oman	2019–2020	Cross-sectional, primary health centers	960	Convenience sampling	Arabic NorVold Domestic Abuse Questionnaire	Clinician diagnosis	Multivariate linear regression	Age, years of marriage, parity, number of people in household, gestational age, planned pregnancy, family income, level of schooling (participant, husband), employment (participant, husband), smoking (participant, husband), alcohol use (participant, husband), and birth outcomes
Paulson and Miller-Graff ⁴³ (2019)	USA	Not reported	Prospective longitudinal cohort, community health center	83	Convenience sampling	Revised Conflict Tactics Scales	Pittsburgh Sleep Quality Index	Hierarchical linear modeling	Parity, gestational age, and minority status
Miller-Graff and Cheng ²⁴ (2017)	USA	Not reported	Cross-sectional, community health center	101	Convenience sampling	Adverse Childhood Experiences Study Questionnaire and Revised Conflict Tactics Scales	Pittsburgh Sleep Quality Index	Path analysis; logistic regressions; ordinary least squares regression	Gestational age and minority status
Sanchez et al. ⁴⁴ (2016)	Peru	2013–2014	Cross-sectional from a prospective cohort, prenatal care clinic	634	Simple random sampling	The Demographic and Health Survey	Ford Insomnia Response to Stress Test and the Pittsburgh Sleep Quality Index	Logistic regression	Age, level of schooling, ethnicity, marital status, employment status, access to basic foods, parity, planned pregnancy, and early pregnancy body mass index
Gelaye et al. ⁴⁹ (2015)	Peru	2013–2015	Cross-sectional from a prospective cohort, prenatal care clinic	630	Simple random sampling	Childhood Physical and Sexual Abuse Questionnaire	Ford Insomnia Response to Stress Test–Spanish version and the Pittsburgh Sleep Quality Index–Spanish version	Logistic regression and exploratory mediation analysis	Age, educational level, ethnicity, marital status, employment status, access to basic foods, parity, planned pregnancy, and early pregnancy body mass index
Ezzati-Rastegar et al. ⁴⁵ (2022)	Iran	2017	Cross-sectional, health centers	465	Systematic random sampling	Conflict Tactics Scales	General Health Questionnaire–28 (items 8–14)	Cronbach α , multivariate analysis of covariance, and logistic regression	Somatic symptoms, social dysfunction, depression
Gustafsson et al. ⁵¹ (2017)	USA	Not reported	Cross-sectional, from a prospective cohort, Obstetrics and Gynecology Departments of two medical centers	262	Convenience sampling	Childhood Trauma Questionnaire–Short Form	Pittsburgh Sleep Quality Index	Structural equation modeling	Age, ethnicity, family income, and child's sex
Kendall-Tackett et al. ⁵² (2013)	Global (59 countries)	2008–2009	Cross-sectional, Community	994	Stratified random sampling	Two questions on the contact Childhood Sexual Abuse questionnaire	Self-Reported on a 253-item Survey of Mother's Sleep and Fatigue	Two-way analysis of variance	Breastfeeding status
Swanson et al. ⁵⁰ (2014)	USA	Not reported	Cross-sectional from a prospective cohort, Prenatal clinic	173	Convenience sampling	Childhood Trauma Questionnaire	Sleep items on Postpartum Depression Screening Scale (PDSS)	Logistic regression; Stepwise regression modelling	Maternal body mass index, PTSD diagnosis, child's gender, race, age, income, schooling, marital status, infant sleep

Table 1 (Continued)

Author (year)	Country	Data collection period	Study design and setting	Sample size (n)	Sampling strategy	IPV tools	Sleep tools	Statistical methods	Confounders adjusted
Sit et al. ⁴⁷ (2015)	USA	Not reported	Cross-sectional from a prospective cohort, hospitals	628	Purposive sampling	1) Dissociative Disorders Interview Schedule: 2) abuse history obtained by inquiry from clinicians on patients' experience of physical abuse or sexual abuse in childhood or adulthood	Sleep items from the Structured Interview Guide for the Hamilton Depression Rating Scale with Atypical Depression Supplement	Cumulative logistic regression models, multivariate models, backward stepwise logistic regressions Analysis of variance, Pearson Chi-squared /Fisher exact test	Age, race, parity, insurance, marital status, schooling, number of psychiatric or chronic medical conditions, time of illness onset, depression severity, anxiety symptoms, global functioning
Gessese et al. ⁴² (2022)	Ethiopia	2021	Cross-sectional, community	858	Simple random sampling	Abuse history obtained by inquiry from study personnel and community health workers on patients' experience of IPV	Pittsburgh Sleep Quality Index	Binary and multivariable logistic regression	Age, schooling, women's occupation, religion, marital status, medical history, family size, and family history of mental illness
Foss et al. ⁴⁸ (2022)	USA	Not reported	Cross-sectional from a prospective longitudinal cohort	204	Convenience Sampling	Childhood Trauma Questionnaire—Short Form	Pittsburgh Sleep Quality Index	Path analysis; model fit examined using the Tucker–Lewis index, and root mean squared error of approximation	Maternal pre-pregnancy body mass index and maternal age

Abbreviations: IPV, intimate partner violence; PTSD, posttraumatic stress disorder; USA, United States of America.

IPV in the postpartum period – 11 to 30.2%.⁴⁷ The studies that mentioned IPV in the 12 months preceding pregnancy reported psychological IPV as the most prevalent (range: 1–59.2%), followed by physical IPV (range: 2.2–26.8%), and sexual IPV^{24,43–46,49} (range: 1.6–21.3%). In the studies that mentioned lifetime IPV,^{24,43–45} the physical type was reported to range from 9.2 to 23.4%, the sexual type, from 2.4 to 15.5%, either the physical or the sexual types, from 7.3 to 20.5%, and the physical and sexual types combined, from 27.6 to 33%. Two studies^{42,46} assessed any type of IPV, and the prevalence reported ranged from 1.6 to 48.6%. One study⁴⁷ reported IPV during the postpartum period, and the physical type was the most common (30.2%), followed by the sexual type (11%).

Regarding ACEs, the prevalence was high, with 56 to 70% of the women reporting having experienced at least one form of ACE (physical, sexual, or psychological).^{24,48} Moreover, 74.4% of women reported having experienced either physical or sexual violence as a child, whereas 16.2 to 25.9% of children faced both physical and sexual violence.^{49,50} Further, physical violence was the most common form of violence that women endured as children, affecting 16.6 to 41.1% of them.^{47,49} Psychological violence was second most common form of violence, affecting 33.9% of the women interviewed, while the prevalence of sexual ACEs ranged from 2 to 20.9%.^{49–52}

Prevalence of Sleep Problems (► Table 3)

Overall, poor sleep affected 1 in every 4 pregnant or postpartum woman in the studies analyzed. The prevalence of poor sleep quality ranged from 24.0 to 70.6%^{42–44,48,49,51,52} during pregnancy considered in its entirety, from 33 to 70.6% in the second trimester, and from 39 to 63.4% in the third trimester (69.7% reported in the first trimester in one study).^{48,51} Sleep difficulties affected 25.4 to 64.4% of pregnant and postpartum woman,^{24,46,47,50} the prevalence of insomnia ranged from 48.9 to 61.5%,^{44,45,47,49} while 22.6% reported difficulty in falling asleep, and 24.5% reported problems staying asleep.⁵⁰ One study⁵² reported the increased time it took for participants who experienced sexual ACEs to fall asleep (abused group: mean = 24.54 ± 19.98 minutes; non-abused group: mean = 19.44 ± 16.89 minutes), and lesser hours of sleep per night were observed (abused group: mean = 6.49 ± 1.32 hours; non-abused group: mean = 6.59 ± 0.12 hours).

Association between Violence and Sleep (► Table 4)

Lifetime IPV

The studies^{44,46,47,52} explored the association of lifetime IPV with four maternal sleep indicators: sleeping difficulties, sleep quality, few hours of sleep, and time (in minutes) to fall asleep. Sleeping difficulties occurred among women who experienced lifetime IPV of the physical type (adjusted odds ratio [aOR] – range: 1.1–3.2), of the sexual type (aOR – range: 1.0–3.4), of the psychological type (aOR: 2.2), or of the 3 types combined (aOR: 1.5). Women reported poor sleep quality during pregnancy when experiencing lifetime IPV of the physical type (aOR: 1.7), of the sexual type (aOR: 2.8),

Table 2 IPV within 12 months before pregnancy includes columns physical, sexual, psychological, financial, physical or sexual, physical and psychological, any. IPV during pregnancy includes columns physical, psychological, physical and psychological, any. IPV in postpartum period includes columns, physical, sexual. Lifetime IPV includes physical, sexual, psychological, physical and sexual, physical or sexual, any.

Author, year	Prevalence of IPV within 12 months before pregnancy (%)						Prevalence of IPV during pregnancy (%)			Prevalence of IPV during postpartum period		Prevalence of lifetime IPV (%)						Prevalence of ACEs (%)								
	Physical	Sexual	Psychological	Financial	Physical or sexual	Physical and psychological	Physical	Any	Psychological	Physical and psychological	Physical	Any	Sexual	Physical and sexual	Psychological	Sexual	Physical and sexual	Psychological	Sexual	Physical or sexual	Physical	Any	Mean ACEs= 2.7 (SD = ± 2.8)			
Al Shidhani et al. ⁴⁶ (2020)	2.2	-	1	-	-	0.5	2.7	0.3	1.4	0.1	1.6	-	Physical	-	11.6	-	4	16.8	-	-	-	-	-	-		
Paulson and Miller-Graff ⁴³ (2019)	3.7	9.8	11	-	-	-	22	-	-	-	-	-	Physical	-	-	-	-	-	-	-	-	-	-	-		
Miller-Graff and Cheng ²⁴ (2017)	21.8	21	31.7	-	44.5	-	-	-	-	-	-	-	Physical	-	-	-	-	-	-	-	-	-	-	70		
Sanchez et al. ⁴⁴ (2016)	6.8	1.6	1.1	-	9.5	-	-	-	-	-	-	-	Physical	-	-	23	2.4	-	-	-	-	-	-	-		
Gelaye et al. ⁴⁹ (2015)	-	-	-	-	-	-	-	-	-	-	-	-	Physical	-	-	-	-	-	-	-	-	-	-	-		
Ezzati-Rastegar et al. ⁴⁵ (2022)	26.8	21.3	59.2	21.1	-	-	7.7	-	-	-	-	-	Physical	-	-	-	-	-	-	-	41.1	7.5	-	-	-	
Gustafsson et al. ⁵¹ (2017)	-	-	-	-	-	-	-	-	-	-	-	-	Physical	-	-	-	-	-	-	-	-	-	-	-	-	
Kendall-Tackett et al. ⁵² (2013)	-	-	-	-	-	-	-	-	-	-	-	-	Physical	-	-	-	-	-	-	-	-	-	-	-	-	
Swanson et al. ⁵⁰ (2014)	-	-	-	-	-	-	-	-	-	-	-	-	Physical	-	-	-	-	-	-	-	-	-	-	-	-	
Sit et al. ⁴⁷ (2015)	-	-	-	-	-	-	-	-	-	-	-	-	Physical	-	-	-	-	-	-	-	-	-	-	-	-	
Gessese et al. ⁴² (2022)	-	-	-	-	-	-	-	-	-	-	-	-	Physical	30.2	-	-	-	-	-	-	-	16.6	20.9	-	-	-
Foss et al. ⁴⁸ (2022)	-	-	-	-	-	-	-	-	-	-	-	-	Physical	-	-	-	-	-	-	-	-	-	-	-	-	
													Physical	-	-	-	-	-	-	-	-	-	-	-	-	56

Abbreviations: ACEs, adverse childhood experiences; IPV, intimate partner violence; PTSD, posttraumatic stress disorder; SD, standard deviation.

Table 3 Prevalence rates (%) of poor-sleep variables in the 12 peer-reviewed articles (1990–2022) included in the review.

Author (year)	Sleeping disturbances (may or may not be stress related)/ impairment	Poor sleep quality	High sleep latency	Poor sleep efficiency	Insomnia	Difficulty staying asleep	Hours of sleep per night	Minutes to fall asleep
Al Shidhani et al. ⁴⁶ (2020)	45	–	–	–	–	–	–	–
Paulson and Miller-Graff ⁴³ (2019)	–	56.3	–	–	–	–	–	–
Miller-Graff and Cheng ²⁴ (2017)	64.4	1.2 (SD = ± 1.2)	1.5 (SD = ± 1.1)	1.0 (SD = ± 0.9)	–	–	–	–
Sanchez et al. ⁴⁴ (2016)	–	28.1	–	–	48.9	–	–	–
Gelaye et al. ⁴⁹ (2015)	–	28.1	–	–	49.4	–	–	–
Ezzati-Rastegar et al. ⁴⁵ (2022)	–	–	–	–	61.5	–	–	–
Gustafsson et al. ⁵¹ (2017)	–	Trimester 1: 69.7%; trimester 2: 70.6%; trimester 3: 63.4%	–	–	–	–	–	–
Kendall-Tackett et al. ⁵² (2013)	–	–	–	–	–	–	6.4 (SD = ± 1.3)	24.5 (SD = ± 20.0)
Swanson et al. ⁵⁰ (2014)	25.4	–	–	–	–	24.5	22.6	–
Sit et al. ⁴⁷ (2015)	4.7 (SD = ± 1.9)	–	–	–	2.4 (SD = ± 1.4)	–	–	–
Gessesse et al. ⁴² (2022)	–	24	–	–	–	–	–	–
Foss et al. ⁴⁸ (2022)	–	Trimester 2: 33%; trimester 3: 39%	–	–	–	–	–	–

Abbreviation: SD, standard deviation.

Table 4 Summary findings on associations between IPV and sleep in the 12 peer-reviewed articles (1990–2022) included in the review.

Sleep Outcomes	Type of IPV	Time of IPV exposure			
		In the 12 months preceding pregnancy	During pregnancy	During postpartum the period	Lifetime IPV
Sleeping difficulties	Physical	–	–	–	1) OR = 3.2; 95%CI: 1.5–6.5; $p < 0.05$ (Al Shidhani et al. ⁴⁶); 2) OR = 1.2; 95%CI: 0.8–1.8 (Sanchez et al. ⁴⁴); 3) OR = 1.1; 95%CI: 0.9–1.3* (Sit et al. ⁴⁷)
	Sexual	–	–	–	1) OR = 3.4; 95%CI: 1.1–11.1 (Sanchez et al. ⁴⁴); 2) OR = 1.0; 95%CI: 0.8–1.3* (Sit et al. ⁴⁷)
	Psychological	–	1) OR = 12.4; 95%CI: 0.9–176.8; $p > 0.05$ (Al Shidhani et al. ⁴⁶)	–	1) OR = 2.2; 95%CI: 1.0–4.7; $p < 0.05$ (Al Shidhani et al. ⁴⁶)
	Physical and sexual IPV	–	–	–	1) OR = 2.5; 95%CI: 1.3–5.0 (Sanchez et al. ⁴⁴)
	Any IPV	1) OR = 2.1; 95%CI: 1.2–3.7 (Sanchez et al. ⁴⁴)	–	–	1) OR = 1.5; 95%CI: 1.1–2.2 (Sanchez et al. ⁴⁴)
	Physical	–	–	–	1) OR = 1.7; 95%CI: 1.1–2.6 (Sanchez et al. ⁴⁴)
Sleep quality	Sexual	–	–	–	1) OR = 2.8; 95%CI: 1.0–8.0 (Sanchez et al. ⁴⁴)
	Psychological	1) β : 0.26; $p < 0.05$ (Paulson and Miller-Graff ⁴³)	–	–	–
	Any IPV	1) β : 0.24; $p < 0.05$ (Paulson and Miller-Graff ⁴³); 2) OR = 2.3; 95%CI: 1.3–4.0 (Sanchez et al. ⁴⁴)	–	OR = 2.6; 95%CI: 1.8–3.8 (Gessesse et al. ⁴²)	OR = 1.9; 95%CI: 1.3–2.8 (Sanchez et al. ⁴⁴)
	Physical	OR = 2.7; 95%CI: 1.6–4.5 (Ezzati-Rastegar et al. ⁴⁵)	–	–	OR = 1.7; 95%CI: 1.1–2.6 (Sanchez et al. ⁴⁴)
	Sexual	OR = 1.9; 95%CI: 1.1–3.2 (Ezzati-Rastegar et al. ⁴⁵)	–	–	–
	Financial	OR = 1.7; 95%CI: 1.1–2.9 (Ezzati-Rastegar et al. ⁴⁵)	–	–	–
Sleep latency	Sexual IPV	β : 0.25; $p < 0.05$ (Paulson and Miller-Graff ⁴³)	–	–	–
	Sexual IPV	β : 0.21; $p < 0.05$ (Paulson and Miller-Graff ⁴³)	–	–	–
Hours of sleep per night	Sexual IPV	–	–	–	F = 14.1; $p < 0.001$; partial $\eta^2 = 0.002$ (Kendall-Tackett et al. ⁵²)
Minutes to fall asleep	Sexual IPV	–	–	–	F = 46.600; $p < 0.000$; partial $\eta^2 = 0.008$ (Kendall-Tackett et al. ⁵²)

Abbreviations: 95%CI, 95% confidence interval; IPV, intimate partner violence; OR, odds ratio.

Note: * Association between self-harm thoughts and sleep disturbances among women with a history of lifetime physical and sexual abuse.

Table 5 Summary findings on associations between ACEs and sleep in the 12 peer-reviewed articles (1990–2022) included in the review.

	Neglect	
Sleeping difficulties/ disturbances	Swanson et al. (2014) ⁵⁰	OR: 4.8; 95% CI: 1.1–21.2
	Physical abuse	
	Leslie et al. (2015)	OR: 9.2; 95%CI: 2.2–38.4
	Sit et al. ⁴⁷ (2015)	OR: 1.0; 95%CI: 0.8–1.3*
	Sexual abuse	
	Leslie et al. (2015)	OR: 1.2; 95%CI: 0.3–5.3
	Sit et al. ⁴⁷ (2015)	OR: 1.0; 95%CI: 0.9–1.3*
	Physical and sexual abuse	
	Leslie et al. (2015)	OR: 6.0; 95%CI: 1.5–23.6
	Any ACE	
	Gelaye et al. ⁴⁹ (2015)	OR: 1.7; 95%CI: 1.2–2.4 (any childhood abuse versus none)
OR: 2.4; 95%CI: 1.2–3.5 (≥ 3 types of abuse versus none)		
Gustafsson et al. ⁵¹ (2017)	$r = 0.3$; $p < 0.01$ (13–16 weeks of gestation)	
	$r = 0.2$; $p < 0.05$ (24–27 weeks of gestation)	
	$r = 0.2$; $p < 0.01$ (34–37 weeks of gestation)	
Sleep quality	Neglect	
	Leslie et al. (2015)	OR: 5.8; 95%CI: 1.7–20.2
	Physical abuse	
	Leslie et al. (2015)	OR: 3.8; 95%CI: 1.0–14.2
	Sexual abuse	
	Leslie et al. (2015)	OR: 1.1; 95%CI: 0.3–3.9
	Physical and sexual abuse	
	Leslie et al. (2015)	OR: 3.6; 95%CI: 1.0–12.3
	Any ACE	
	Paulson and Miller-Graff ⁴³ (2019)	β : 0.3; $p < 0.01$
	Miller-Graff and Cheng ²⁴ (2017)	β : 0.1; $p > 0.05$
	Gelaye et al. ⁴⁹ (2015)	OR: 2.1; 95%CI: 1.4–3.3 (any childhood abuse versus none)
		OR: 2.4; 95%CI: 1.2–3.5 (≥ 3 types of abuse versus none)
Foss et al. ⁴⁸ (2022)	β : 0.2; $p < 0.05$ (poor sleep during second trimester)	
	β : 0.1; $p < 0.05$ (poor sleep during third trimester)	
Sleep efficiency	Any ACE	
	Miller-Graff and Cheng ²⁴ (2017)	β : 0.1; $p > 0.05$
Sleep latency	Any ACE	
	Miller-Graff and Cheng ²⁴ (2017)	β : 0.1; $p > 0.05$

Abbreviations: 95%CI, 95% confidence interval; ACEs, adverse childhood experiences; OR, odds ratio.

Note: * Association between self-harm thoughts and sleep disturbances among women with a history of physical and sexual abuse during childhood.

and of the physical, sexual, and psychological types combined (aOR: 1.9). Experience of lifetime sexual IPV was a risk factor for few hours of sleep per night ($F_{1,5837} = 14.1$; $p < 0.00$; partial $\eta^2 = 0.002$) and longer time to fall asleep ($F_{1,6020} = 46.600$; $p < 0.000$; partial $\eta^2 = 0.008$).⁵²

IPV in the 12 Months Preceding Pregnancy

The studies explored the association of IPV in the 12 months preceding pregnancy and five maternal sleep indicators: sleep quality, sleeping difficulties, insomnia, and sleep

efficiency and latency. In two studies,^{43,44} the participants, who had experienced physical, sexual, or psychological IPV, reported difficulty sleeping (aOR: 2.1) and poor sleep quality (aOR: 2.3; $\beta = 0.24$; $p < .05$). In one study,⁴⁵ the odds of experiencing insomnia during pregnancy were high among women who had experienced physical (aOR: 2.7), sexual (aOR: 1.9), and financial IPV (aOR: 1.7). However, one of the studies⁴⁶ reported that IPV in the year preceding pregnancy had no effect on sleep quality.⁴⁶ Sexual IPV one year before pregnancy was associated with higher sleep latency ($\beta = 0.25$;

$p < .05$) and lower sleep efficiency ($\beta = 0.21$; $p < .05$).⁴³ However, one of the studies²⁴ reported that physical, sexual, or psychological IPV in the year before pregnancy had no association with sleep quality, efficiency, nor latency ($p > 0.05$).

IPV during Pregnancy

Only two studies^{42,46} assessed the association between IPV during pregnancy and maternal sleep outcomes, namely sleeping disturbances and sleep quality. One study⁴⁶ found that while psychological IPV during pregnancy was associated with sleep disturbances (14.1%; $p = 0.024$). Other forms of IPV did not have any association with sleep disturbances ($p > 0.05$).⁴⁶ Women who experienced any type of IPV had 2.8 higher odds (95% confidence interval [95%CI]: 1.8–3.8) of experiencing poor sleep quality⁴² (► **Table 5**).

ACEs

Seven studies^{24,43,47–50,52} examined the association of pregnant women who reported ACEs with four maternal sleep indicators: sleep disturbances, sleep quality, sleep efficiency, and sleep latency during pregnancy.

The likelihood of experiencing sleep disturbances was 1.7 to 9.2 times higher if the women had experienced any type of ACE (aOR: 1.7; 95%CI: 1.2–2.4),⁴⁹ ≥ 3 types (aOR: 2.4; 95%CI: 1.2–3.5),⁴⁹ neglect as a child (aOR: 4.8; 95%CI: 1.1–21.2),⁵⁰ physical abuse as a child (aOR: 9.2; 95%CI: 2.2–38.4),⁵⁰ sexual abuse as a child (aOR: 1.2; 95%CI: 0.3–5.3),⁵⁰ or physical or sexual abuse as a child (aOR: 6.0; 95%CI: 1.5–23.6).⁵⁰ However, one of these studies⁴⁷ found that maternal sleep disturbances were associated with experiences of physical or sexual abuse as a child.

In 3 studies,^{43,48,49} pregnant women who suffered ACEs had 0.1–0.3 units poorer sleep quality during pregnancy,^{43,48} or a 2.1–2.4 higher likelihood of experiencing poor sleep quality.⁴⁹ However, this association was statistically significant only in one study²⁴ ($\beta = 0.12$; $p > 0.05$).²⁴ On the other hand, poor sleep during pregnancy appeared to have no association with the experience of physical, sexual, or physical or sexual abuse as a child in another study.⁵⁰ Women who experienced neglect as a child had a 5.8 times higher likelihood of sleeping poorly during pregnancy.⁵⁰

In one of the studies,²⁴ ACEs had no association with sleep efficiency or sleep latency. However, in 2 studies,^{50,52} postpartum women who experienced childhood violence reported poor and shorter sleep time ($F_{1,5837} = 14.073$; $p < 0.000$; partial $n^2 = 0.002$),⁵² and difficulty staying asleep (neglect: aOR = 5.78; 95%CI = 1.65–20.23; $p < 0.01$; physical violence: aOR = 3.84; 95%CI = 1.04–14.24; $p < 0.05$; sexual violence: aOR = 1.06; 95%CI = 0.29–3.87; $p > 0.05$; and physical and sexual violence: aOR = 3.56; 95%CI = 1.03–12.31; $p < 0.05$).⁵⁰ These 2 studies also reported associations involving childhood violence and significantly longer sleep latency ($F_{1,6020} = 46.600$; $p < 0.000$; partial $n^2 = 0.008$)⁵² or difficulty falling asleep (neglect: aOR = 4.84; 95%CI = 1.11–21.19; $p < 0.05$; physical abuse: aOR = 9.20; 95%CI = 2.20–38.45; $p < 0.01$; sexual abuse: aOR = 1.21; 95%CI = 0.28–5.25; $p > 0.05$; and physical and sexual violence: aOR = 5.95; 95%CI = 1.50–23.57; $p < 0.05$).⁵⁰

Discussion

Summary of Main Findings

In the present scoping review, we have found that the experience of violence and sleep disturbances are prevalent among pregnant and postpartum women, regardless of their contextual differences (such as, the countries where the studies were conducted, or how the samples were selected in the studies). Lifetime IPV was the most common type, followed by IPV in the year preceding pregnancy and IPV during pregnancy. In certain contexts, lifetime IPV affected as many as one in two women.^{44,46,47,52} Moreover, IPV in the year preceding pregnancy was common too, although women in certain contexts only reported it occasionally.^{24,43–46} The least common type was IPV during pregnancy, perhaps due to its limited empirical examination to date.^{42,46} Psychological IPV was more common than physical or sexual IPV among pregnant and postpartum women. Adverse childhood experiences were at least as common as lifetime IPV, with nine out of ten women reporting them in certain contexts.^{24,43,47–52} Regarding sleep health outcomes, poor sleep quality was the most commonly reported problem among pregnant and postpartum women, followed by sleep disturbances and insomnia.^{24,42–49,51,52}

Overall, past experience of violence perpetrated or not by an intimate partner is a risk factor for poor sleep health among pregnant and postpartum women. Lifetime IPV and ACEs almost double the likelihood that women will report poor sleep-health symptoms during pregnancy.^{24,43,44,47–49,51,52} Moreover, ACEs least triple the likelihood that women will report poor sleep health symptoms during the postpartum period.⁵² Psychological and physical IPV presented stronger associations with poor sleep health symptoms than sexual IPV,^{43–47} but IPV in the year preceding pregnancy yielded mixed findings, ranging between no association and a sizable one.^{43–45}

Strengths and Limitations

The findings of the current study should be interpreted considering the following strengths and limitations pertinent to the articles reviewed. First, the extent to which the past experience of violence causes poor sleep health during pregnancy is yet to be established in the current body of literature involving primarily cross-sectional data. As shown in ► **Fig. 1**, it is plausible that the experience violence and sleep disturbances may occur in response to certain structural stressors, such as poverty.⁵³ Further, since the experience of violence is socially determined, it is an endogenous variable, and when studies ignore such endogeneity, they may be under or overestimating their reported associations between this variable and sleep health. After an experience of violence, certain women may suffer from poor sleep health and others may not, depending on their access to social support, for example. None of the studies reviewed explored this effect heterogeneity, nor did they explore the mechanism linking the experience of violence and poor sleep health. Studies have yet to explore the relative significance of this association in the context of previous and more established findings that the experience of violence is associated with higher stress levels and with mental health conditions, and that stress and sleep are highly

comorbid. Further, the studies have not explored the potentially moderating effect of stress.

The present scoping review has its own strengths and limitations, too. As for the strengths, the evidence herein reported is based on an exhaustive list of pertinent studies from several peer-reviewed databases (as per our knowledge). The search strategy was comprehensive and spanned across multiple databases, enabling the identification and synthesis of all studies published between 1950 and 2023 across the globe. All studies that explored the impact of lifetime experience of violence on the sleep health of pregnant and postpartum women were included. Suggesting external validity, the prevalence ranges herein reported are comparable to those reported in previous systematic reviews including several countries across the globe. For perinatal mental disorders, such as depression, the prevalence range reported in this current review is comparable to the global prevalence range (24–50%) reported in a previous systematic review.⁵⁴ Likewise, for the experience of any one type of IPV during pregnancy, the prevalence range reported is comparable to that reported in a previous systematic review (2–57%).⁵⁵ The main limitation of the present systematic review is the inclusion of studies which assessed violence for a period that is inclusive of, but not exclusive to, pregnancy. Publication bias may have led to an overestimation of associations.

The current review was dominated by studies from high-income countries, which employed facility-based (health center, hospital, clinics) sample recruitment strategies, making the findings more applicable to urban, or facility-heavy high-income countries. The ethnic representation in the study samples was also skewed toward North Americans, with absence of additional recruitment strategies to engage immigrant or refugee communities. However, the prevalence of violence reported in the United States was comparable to those of countries such as Oman, Peru, and Iran (United States: 20–50%; Iran/Peru/Oman: 16–40%).^{43–46} Thus, the prevalence of sleep problems reported was also comparable across countries.

Conclusion

The current scoping review shows that the experience of violence in one or more stages of life can affect perinatal sleep quality. We have found that women are vulnerable to experiencing violence in every stage of their lives, including childhood and pregnancy. This body of empirical evidence, coupled with our conceptual framework associating the experience of violence with poor sleep, offers a rationale to build evidence on sleep health among populations at risk of experiencing violence, especially among those from resource-limited settings, where data on sleep health is largely absent. Despite the fact that the present review is global in scope, it was dominated by studies from high-income countries. This resulted in loss of valuable context from low- and middle-income countries and about the role played by cultural differences in mediating or moderating associations. There is an urgent need to start collecting systematic and high-quality data on sleep health from women living in resource-limited settings. Meanwhile, screening the obstetric population for

sleep quality and intervening with women reporting poor sleep health, especially when they also show symptoms of experience of violence, might be a potent strategy.

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Conflict of Interests

The authors have no conflict of interests to declare.

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